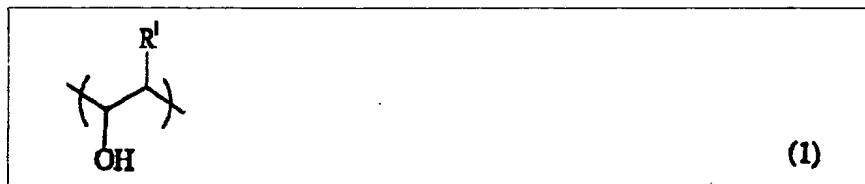


Patent Claims

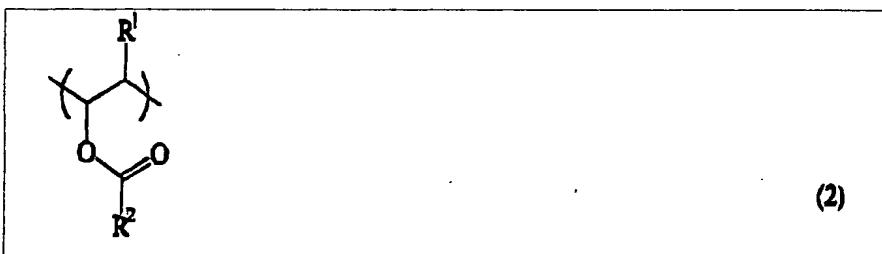
1. A crosslinked polyvinyl acetal, characterised in that it can be obtained from at least one polyvinyl acetal (I), which can be obtained by reacting at least one polymer (A), which contains

a) 1.0 to 99.9 wt.% structural units of formula (1)



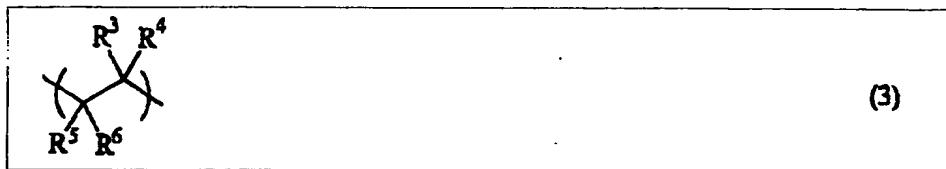
wherein R¹ denotes hydrogen or methyl,

b) 0 to 99.0 wt.% structural units of formula (2)



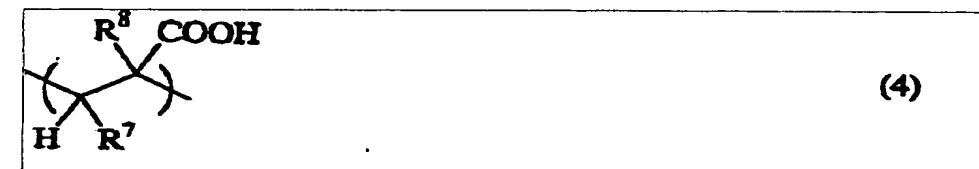
wherein R² represents hydrogen or an alkyl radical with 1 to 6 carbon atoms,

c) 0 to 70.0 wt.% structural units of formula (3)



wherein R^3 , R^4 , R^5 and R^6 are, in each case independently of one another, radicals with a molecular weight in the range from 1 to 500 g/mol,

d) 0.0001 to 30.0 wt.% structural units of formula (4)



wherein R^7 and R^8 represent, in each case independently of one another, hydrogen, a carboxyl group or an alkyl group with 1 to 10 carbon atoms, which can optionally have one or more COOH groups as substituents, related in each case to the total weight of polymer (A), with at least one compound (B) of formula (5),



wherein R^9 and R^{10} are, in each case independently of one another, hydrogen, COOH, an alkyl group with 1 to 10 carbon atoms or an optionally substituted aryl group with 6 to 12 carbon atoms,

whereby groups of formula (1) and of formula (4) are, at least in part, esterified with one another.

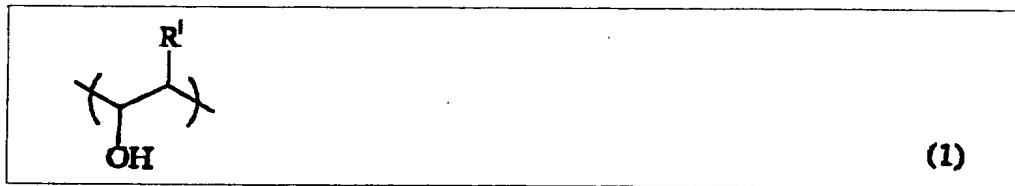
2. The polyvinyl acetal according to claim 1, characterised in that its total content of esterified and non-esterified carboxyl groups lies in the range from 0.001 to 10.0 wt.%, related to the total weight of the polyvinyl acetal.
3. The polyvinyl acetal according to claim 2, characterised in that its total content of esterified and non-esterified carboxyl groups lies in the range from 0.01 to 5.0 wt.%, related to the total weight of the polyvinyl acetal.
4. The polyvinyl acetal according to claim 3, characterised in that its total content of esterified and non-esterified carboxyl groups lies in the range from 0.01 to 2.0 wt.%, related to the total weight of the polyvinyl acetal.
5. The polyvinyl acetal according to at least one of the preceding claims, characterised in that it contains plasticiser.
6. A method for the production of a polyvinyl acetal according to at least one of the preceding claims, characterised in that at least one polyvinyl acetal (I), optionally together with at least one plasticiser, is thermally crosslinked at compound temperatures in the range from 120 to 280°C.
7. The method according to claim 6, characterised in that the thermal crosslinking is carried out in an extruder, a kneading unit or another heatable unit.

8. A moulding compound containing a polyvinyl acetal according to at least one of claims 1 to 5.

9. The moulding compound according to claim 8 further containing a polyvinyl acetal with a weight mean of the molecular weight of less than 1,000,000 g/mol.

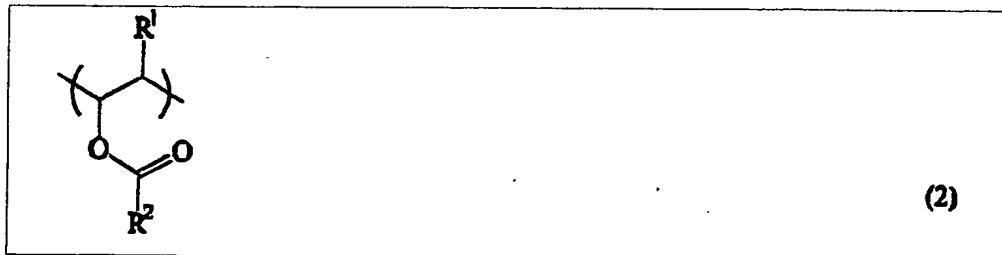
10. The moulding compound according to claim 9, characterised in that the polyvinyl acetal with a weight mean of the molecular weight of less than 10,000,000 g/mol can be obtained by reacting at least one polymer (A'), which contains

a) 1.0 to 99.9 wt.% structural units of formula (1)



wherein R¹ denotes hydrogen or methyl,

b) 0 to 99.0 wt.% structural units of formula (2)



wherein R² represents hydrogen or an alkyl radical with 1 to 6 carbon atoms,

c) 0 to 70.0 wt.% structural units of formula (3)

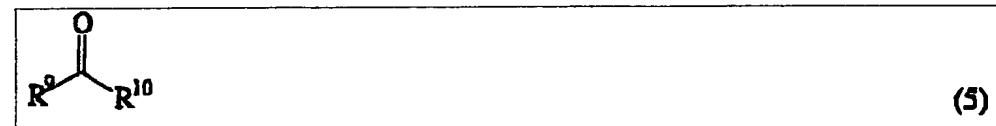


wherein R^3 , R^4 , R^5 and R^6 are, in each case independently of one another, radicals with a molecular weight in the range from 1 to 500 g/mol,

d) less than 0.1 wt.% structural units of formula (4)



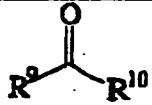
wherein R^7 and R^8 represent, in each case independently of one another, hydrogen, a carboxyl group or an alkyl group with 1 to 10 carbon atoms, which can optionally have one or more COOH groups as substituents, related in each case to the total weight of polymer (A'), with at least one compound (B') of formula (5),



wherein R^9 and R^{10} are, in each case independently of one another, hydrogen, COOH, an alkyl group with 1 to 10 carbon atoms or an optionally substituted aryl group with 6 to 12 carbon atoms,

11. The moulding compound according to at least one of claims 9 or 10, characterised in that the crosslinked polyvinyl acetal and the polyvinyl acetal with a weight mean of the molecular weight of less than 10,000,000 g/mol are present in a weight ratio in the range from 1:10 to 10:1.

12. A film containing a moulding compound according to at least one of claims 8 to 11.
13. The use of a film according to claim 12 for the production of laminated safety glasses.
14. A coating containing a moulding compound according to at least one of claims 8 to 11.
15. The use of a moulding compound according to at least one of claims 8 to 11 for the production of ion-conductive interlayers for electrochromic systems.



(5)

whereby groups of formula (1) and of formula (4) are, at least in part, esterified with one another. Radicals R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹ and R¹⁰ are defined according to the description.

Furthermore, the present invention also relates to methods for the production of the polyvinyl acetal according to the invention as well as its use.